THE CITY OF Kalamazoo

Department of Public Services
Director's Office
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June 30, 2010

Mr. Michael Berkoff, Remedial Project Manager
Superfund Division
U.S. EPA-Region V
77 West Jackson Blvd.
SR-6J
Chicago, IL 60604

RE Allied Paper OU-1 Closure Plan
Containment & Stabilization Option

Dear Mr. Berkoff:

Based on our meeting with you and other interested parties regarding the Allied Paper OU-1 Closure Plan on June 2, 2010, the city, along with its technical consultant, NTH Consultants, Ltd., have prepared an additional option for consideration into the final closure plan for OU-1.

This additional scenario includes all of the engineering controls proposed in our "Containment Option" scenario submitted to you on May 5, 2010, including a "Part 115" composite cover; a soil-bentonite cut-off wall, an interior drainage collection network/pre-treatment system, and a comprehensive groundwater monitoring plan. In addition to these controls, the "Containment & Stabilization Option" includes stabilization of some of the waste residuals with an in-situ mixing utilizing cement kiln dust. This feature should serve to stabilize the waste residuals structurally and chemically. A detailed preliminary cost estimate for this option is approximately $74.8 million. For continuity, this cost estimate was prepared with the same assumptions and basis used in our "Containment Option" scenario, which utilized ARCADIS costs and assumptions from their draft feasibility study report. The additional costs/assumptions for waste stabilization were obtained from an experienced, Michigan-based, national environmental contracting firm. We understand that your technical consultant, CH2MHILL, will complete a detailed review and cost estimate for this scenario as part of the completion of the feasibility study. The cost estimate spreadsheet, along with a general site plan and cross-section are included with this letter for your use.

We appreciate this opportunity to continue to provide closure options that dramatically improves the previously proposed closure options for Allied Paper OU-1. We look forward to continued interactions with your office regarding this matter.

Sincerely,

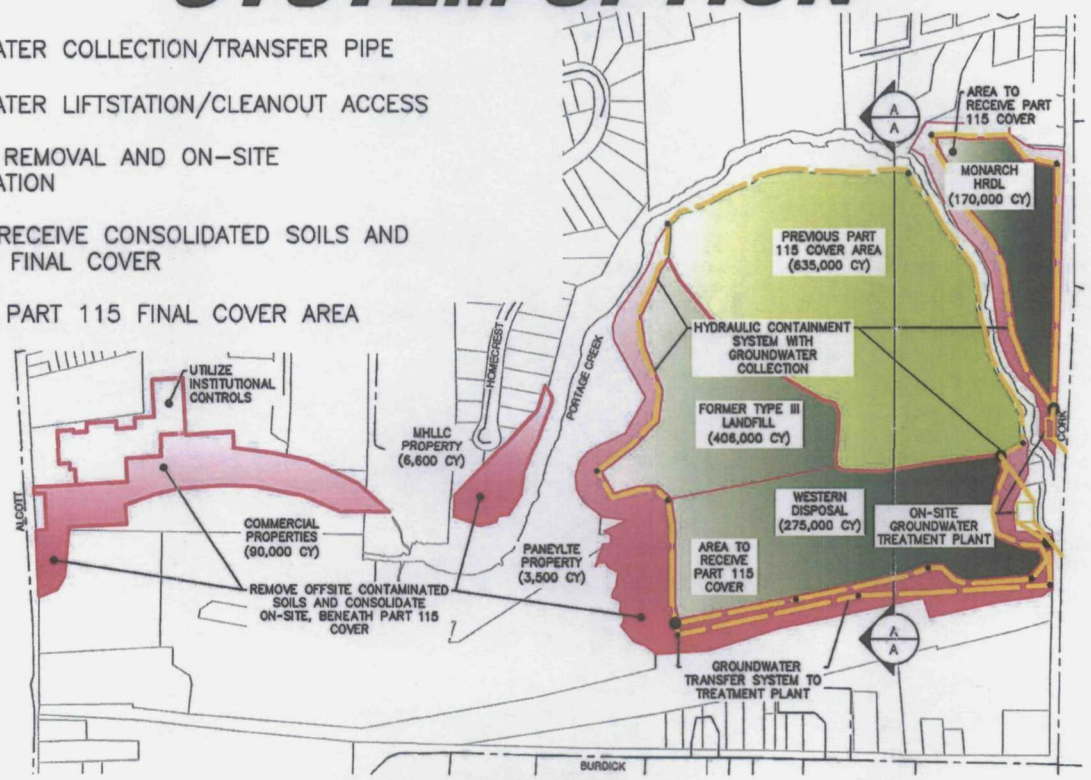
Bruce E. Merchant
Public Services Managing Director

Attachments

ALLIED PAPER (OU-1) CLOSURE
STABILIZATION & CONTAINMENT SYSTEM OPTION

LEGEND

- GROUNDWATER COLLECTION/TRANSFER PIPE
- GROUNDWATER LIFTSTATION/CLEANOUT ACCESS
- OFF-SITE REMOVAL AND ON-SITE CONSOLIDATION
- AREA TO RECEIVE CONSOLIDATED SOILS AND PART 115 FINAL COVER
- PREVIOUS PART 115 FINAL COVER AREA



PLAN VIEW

WASTE VOLUME TO BE STABILIZED

- MHLLC PROPERTY
- COMMERCIAL PROPERTIES
- PANEYLTE PROPERTY
- WESTERN DISPOSAL
- MONARCH HRDL

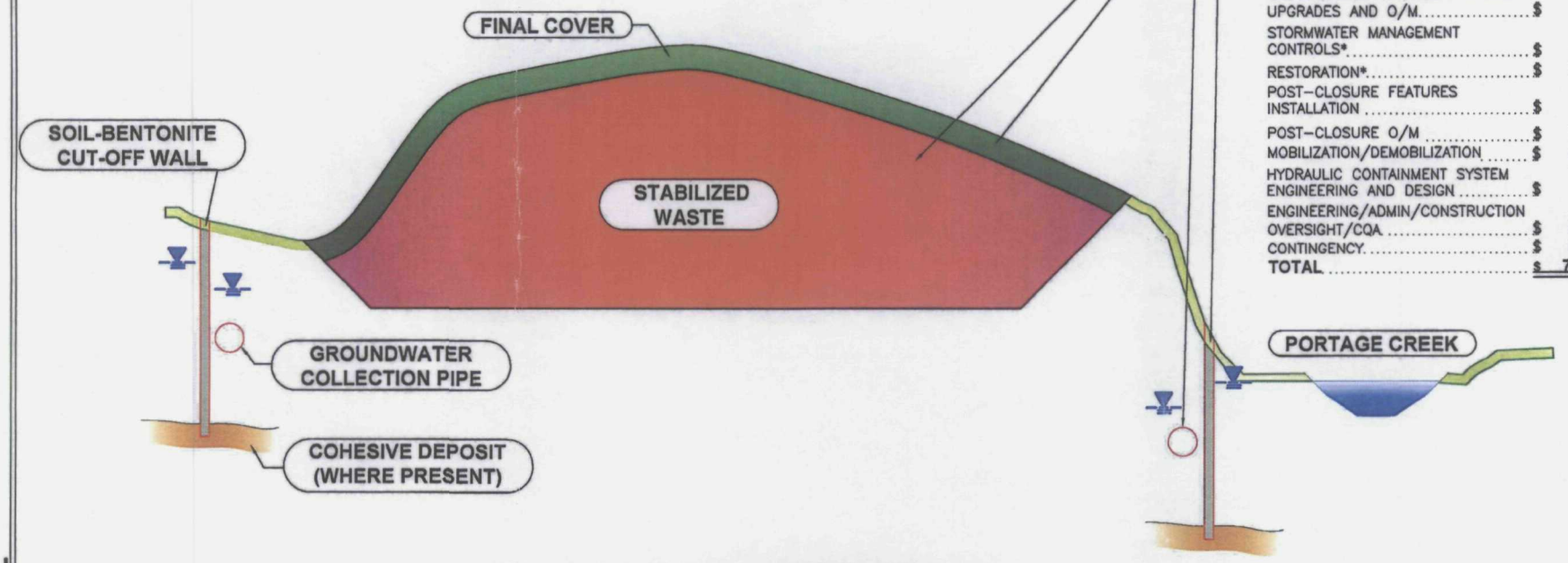
PREPARED BY:

THE CITY OF Kalamazoo

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

VOLUMES OBTAINED FROM DRAFT FEASIBILITY STUDY PRESENTATION, SLIDE 14 PREPARED BY ARCADIS, DATED 09/14/06.

ALLIED PAPER (OU-1) CLOSURE
STABILIZATION & CONTAINMENT SYSTEM OPTION



A TYPICAL CROSS-SECTION

COST ESTIMATE

ITEM	COST
SITE PREPARATION	$ 3,620,000
OFF-SITE WASTE CONSOLIDATION*	$ 3,334,000
WASTE STABILIZATION	$ 21,808,000
PART 115 FINAL COVER	$ 6,110,000
GROUNDWATER COLLECTION SYSTEM	$ 3,750,500
SOIL-BENTONITE CUT-OFF WALL	$ 2,700,000
GROUNDWATER TRANSFER SYSTEM	$ 625,000
GROUNDWATER TREATMENT SYSTEM UPGRADES AND O/M	$ 1,430,750
STORMWATER MANAGEMENT CONTROLS*	$ 1,257,000
RESTORATION*	$ 3,455,000
POST-CLOSURE FEATURES INSTALLATION	$ 1,104,000
POST-CLOSURE O/M	$ 7,500,000
MOBILIZATION/DEMOBILIZATION	$ 4,919,000
HYDRAULIC CONTAINMENT SYSTEM ENGINEERING AND DESIGN	$ 250,000
ENGINEERING/ADMIN/CONSTRUCTION OVERSIGHT/CQA	$ 6,161,000
CONTINGENCY	$ 6,802,000
TOTAL	$ 74,830,000

PREPARED BY:

City of Kalamazoo

NTH Consultants, Ltd. Infrastructure Engineering and Environmental Services

*COST OBTAINED FROM DRAFT FEASIBILITY STUDY REPORT, PREPARED BY ARCADIS, DATED 10/29/09.

ALLIED PAPER (OU-1) CLOSURE

SOLIDIFICATION AND CONTAINMENT SYSTEM OPTION

	Item	Quantity	Unit	Unit Cost	Extended Cost	Assumptions
1	Site Preparation	1	LS	$ 3,620,000	$ 3,620,000	1
2	Excavation and consolidation of offsite wastes	1	LS	$ 3,334,000	$ 3,334,000	1
3	Stabilization of Waste - Material	654,240	ton	$ 25	$ 16,356,000	2
4	Stabilization of Waste - Installation/Mixing	545,200	cy	$ 10	$ 5,452,000	3
5	Final Cover System					
	a. Survey	1	LS	$ 70,000	$ 70,000	1
	b. Grading Layer	1	LS	$ 452,000	$ 452,000	1
	c. Geotextile Separator	1	LS	$ 366,000	$ 366,000	1
	d. Gas Venting Layer	28	ac	$ 48,400	$ 1,355,200	4
	e. Passive Gas Vents	28	ea	$ 1,800	$ 50,400	5
	f. Geomembrane	28	ac	$ 21,800	$ 610,400	6
	h. Geocomposite	28	ac	$ 24,960	$ 698,880	7
	d. Soil Protection Layer	28	ac	$ 65,340	$ 1,829,520	8
	e. Topsoil/Seed/Mulch	28	ac	$ 24,200	$ 677,600	9
6	Soil-Bentonite Cut-Off Wal	450,000	v. sf	$ 6	$ 2,700,000	10
7	Groundwater Collector Pipe	9,000	lf	$ 265	$ 2,385,000	11
8	Groundwater Collector Pipe Backfill	315,000	v. sf	$ 3.70	$ 1,165,500	
9	Groundwater Collector Access C.O.	10	ea	$ 20,000.00	$ 200,000	12
10	Groundwater Transfer Pipe	2,200	lf	$ 100	$ 220,000	13
11	Groundwater Transfer Pipe Connections	15	ea	$ 3,000.00	$ 45,000	
12	Groundwater Transfer Lift Stations	4	ea	$ 90,000	$ 360,000	14
13	Groundwater Treatement System Upgrade/ O&M	1	LS	$ 1,430,750	$ 1,430,750	15
14	Stormwater Management Controls	1	LS	$ 1,257,000	$ 1,257,000	1
15	Restoration	1	LS	$ 3,455,000	$ 3,455,000	1
16	Post Closure Features Installation	1	LS	$ 1,104,000	$ 1,104,000	16
17	Post Closure O & M Cost	1	LS	$ 7,500,000	$ 7,500,000	17
18	Mob/Demob	10	%	-	$ 4,919,000	18
19	Hydraulic Containment System Engineering and Design	1	LS	$ 250,000	$ 250,000	19
20	Engineering/Admin/Construction Oversight and CQA	10	%	-	$ 6,161,000	20
21	Contingency	10	%	-	$ 6,802,000	21
22	**Total Cost**				**$74,826,000**	

Kalamazoo

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

ALLIED PAPER (OU-1) CLOSURE

SOLIDIFICAITON AND CONTAINMENT SYSTEM OPTION

Assumptions

1. From Arcadis Option 3B, Draft Feasibility Study 10/29/09 with increased cost for Hydraulic Containment System Site Prep. Cost based on Experience.

2. Cost Based on Estimate from EQ, Environmental Quality Company. Price accounts for delivery from N. MI Area. Product Cost is Negligible. Assume 1.2 Ton/CY to Stabilize Waste per EQ.
3. Cost Based on Estimate from EQ, Environmental Quality Company. Assume Auger or Excavation/In-Situ Mixing. Volume from ARCADIS presentation 9/14/09, slide 14. Not including Type III or previously capped waste.

4. Assume Sand Backfill from Offsite, Short Haul (<25 mi). Supply, Place, Compact Cost. Cost Based on Past Experience. 28 ac provided by ARCADIS FS Analysis 10/29/09
5. Assume Drill & Backfill, install 6" HDPE Perf/Solid, Screen/Turbine, 5 lf/well, 1/acre. Supply and Install Cost. Cost Based on Past Experience
6. Cost Based on Past Experience. Supply and Place Textured HDPE Geomembrane
7. Cost Based on Past Experience. Supply and Place 200-mil double sided geocomposite
8. 2' Sand Backfill from Offsite, Short Haul (<25 mi). Supply, Place, Compact Cost.Cost Based on Past Experience
9. Assume 4-6" topsoil. Supply and Place Cost. Cost Based on OHM Engineering Bid Tab
10. Assume One-Pass Trench Installation Method, 2 ft wide, Max. 50' depth. Supply & Place Cost Cost Based on Past Experience + Inflation
11. Assume One-Pass Trench Installation Method, Max. 35' depth. Supply & Place 6" HDPE, with Peastone Backfill to Grade. Cost Based on Past Experience + Inflation

12. Assume 2' HDPE Cleanout (C.C.) installed in line. Make connections to transfer/collection line. Cost based on past experience.

13. Assume Directionally Drill for 6" HDPE forcemain line. Assume Trench Excavation to make necessary connections. Supply and Install Cost. Cost based on past experience

14. Includes excavation/backfill for concrete MH installation, lift station MH/Pumps/Access, connections to Transfer/Collection pipe. Cost based on experience.
15. Present Value of 1 time upgrade($500K) and 30 years of O&M Cost ($75K/yr) @ 7% Discount Rate (Discount Rate per AECOM).

16. From Arcadis Option 3B, Draft Feasibility Study. Increased for Addl. Well Installation. Assume $15K for 20 addl. nested wells. 400' J/S & 200' D/S spacing around perimeter.
17. From Arcadis Option 3B, Draft Feasibility Study. Increased groundwater monitoring by a factor of 2 for increased Well Monitoring.
18. Assume 10% of construction features installation cost (not including Post Closure O&M). Cost % based on past experience.
19. Includes engineering, design, slurry wall alignment confirmation borings (90 @ 50ft deep). Cost based on past experience.
20. Assume 10% of construction features installation cost. Cost % based on past experience.
21. Assume 10% for all cost estimates. Cost % based on past experience.

THE CITY OF Kalamazoo

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